N° 2586 A.D. 1902

Date of Application, 31st Jan., 1902—Accepted, 5th June, 1902

COMPLETE SPECIFICATION.

“Improvement in Artificial Legs”

I, John Ebenezer Bousfield, of the Firm of G. F. Redfern & Co., The General Patent Office, No. 4 South Street, Finsbury, in the County of London, Patent Agents, do hereby declare the nature of this invention (a communication to be by The American Artificial Leg Company, a Corporation having its principal office at No. 11E Lexington Street, Baltimore, Maryland, United States of America) and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This present invention is an improvement in artificial legs and consists in the novel features hereinafter described reference being had to the accompanying drawings which illustrate one form in which it is contemplated embodying the invention and the said invention is fully disclosed in the following description and claims.

Referring to the said drawings,

Fig. 1 represents a perspective view of the improved artificial leg arranged for use with a member amputated above the knee.

Fig. 2 is a vertical transverse sectional view of the same.

Fig. 3 is a vertical longitudinal section of the same.

Fig. 4 is an enlarged vertical longitudinal section of the foot.

Fig. 5 is a transverse section of the same on line 5—5 of Fig. 4.

Fig. 6 represents a section on line 6—6 of Fig. 4.

Fig. 7 is a view showing detached the parts of the joint used for the ankle and toe portions of the foot.

Fig. 8 is a detail sectional view of the upper portion of the leg, showing it arranged for use with a member amputated at or slightly below the knee.

Fig. 9 is a sectional view of a portion of the leg showing it arranged for use with a member amputated at a point considerably below the knee.

Figs. 10, 11 and 12 are detail views relating to the knee joint, or spring hinge.

Fig. 13 is a detail view of a tool used for adjusting the said knee joint.

Figs. 14 and 15 are views of a crutch attachment which may be conveniently employed in connection with the leg to relieve the wounded parts from pressure in standing or walking.

Fig. 16 is a detail showing the manner of attaching the crotch pad.

Fig. 17 is a partial view of this artificial leg provided with a removable and adjustable lining or filling, and arranged for a thigh amputation.

Fig. 18 is a similar view arranged for an amputation below the knee.

Figs. 19 and 20 are detail perspective views of the removable and adjustable linings detached.

Fig. 21 is a detail of a modified form of device for connecting the belt to the leg.

The object of this invention is to provide an artificial leg which will be capable of being used with any form of amputation by simple adjustment of the parts, and which can be adjusted vertically to accommodate persons varying considerably in height, so that it will be necessary to provide only a few sizes to accommodate all cases for which an artificial leg is required. The improved artificial leg is also constructed to give the greatest possible comfort to the wearer and to enable him to use the artificial member in exactly the same manner and with the same freedom and confidence that he would a natural member.

The leg consists of three parts, to wit, the upper or thigh section, the calf or lower section and the foot section. In the drawings A represents the thigh section which comprises an outer vertical stiffening bar a, an inner stiffening bar a^1, said bars being composed of wood or light metal, and the flexible side portions a^2 a^3, which are secured together along vertical edges at front and rear.

[*Price 8d.*]

The outer stiffening bar a extends from the knee joint to a point somewhat above the hip joint, and is secured to the outside of one of the side portions a^2, preferably by riveting in such a manner as to leave the inner face of said side portion (which is preferably formed of leather or other flexible material) perfectly smooth. The bar a is also preferably encased by means of a strip a^4, sewed or otherwise secured to the side piece a^2 and the rivets which secure the bar a to the side piece may or may not extend through the strip a^4 as preferred. The side piece a^2 will be cut away from points adjacent to the top of the bar a, down to the front and rear edges of said piece, as shown and it may also be provided with cut out portions a^5 at the upper part to make it cooler, as shown in the drawings. The inner stiffening bar a^1 is secured to its adjacent side piece a^3 (of leather or other suitable flexible material) by riveting or otherwise and is covered by a strip a^6 like the other stiffening bar. The inner bar a^1 is shorter than the outer bar as it extends up along the inner surface of the thigh of the wearer. The front and rear edges of the flexible side portions a^2 a^3 are adjustably united in any suitable manner, as by lacing, as shown in the drawings, although the invention is not limited to the use of lacing, as any equivalent construction may be employed. The upper part of the thigh section is provided with a strap S which extends from the rear and outer side around the inner portion, and is secured to a buckle s provided on the front of the thigh section, this strap being for the purpose of tightening the thigh section at its upper end, and to carry a portion of the weight supported thereby to the upper end of the outer side stiffening bar, as will be readily seen. In order to prevent the upper and inner edge of the thigh section from producing chafing and soreness, it is preferable to pad it as shown at t, (see Figs. 2 and 16) and to further provide a detachable crutch pad T, which extends over the padded portion t, and has its outer end slit to receive the strap S, (see Fig. 16), thereby holding said pad in position.

The outer stiffening bar a is provided at its upper end with a belt A^1 to be secured around the waist of the wearer. This belt is provided with a metal plate b provided with a horizontal slot b^1 which pivotally and slidingly engages a stud b^2 secured to the outer stiffening bar a and is provided with a head. This construction allows of pivotal and sliding movements between the stiffening bar and the belt and facilitates the use of the leg in sitting, bending, *etc.*

In Fig. 21 is shown a modified construction for attaching the belt to the upper part of the thigh section. In this construction a ring b^3 is employed which is connected to the thigh section by two leather loops b^4 b^4, sewed thereto and engaging the ring and the belt A^1 is provided with a third loop b^5 also engaging the ring. It will be understood that the loops are so constructed as to move freely upon the ring or to allow the ring to move freely through them and by this construction the desired adjustment of the belt with respect to the thigh section is accomplished in the various positions assumed by the wearer of the leg.

Each of the flexible side pieces a^2 a^3 is provided with two or more pairs of slots a^7 at different heights to receive the straps c c of a sling C, provided with a cushion or pad upon which the stump of the leg (if a thigh amputation) can rest gently. The ends of straps c c are passed through one pair of slots a^7 in each side piece and secured by any desired means, such as buckles a^8 secured to the side pieces, one adjacent to each of said slots as shown in the drawing.

The lower or calf section D of the leg is also provided with inner and outer stiffening bars d d^1 secured to flexible side pieces d^2 d^3, and covered by strips d^4 d^6 like those of the thigh section and the edges of the flexible side sections are adjustably secured at front and rear by lacings, or otherwise. The said portions d^2 d^3 are provided each with a pair of slots d^7 d^7 to receive the straps e of a ventilating stump supporting sling E (see Fig. 9) when the leg is used with a member amputated considerably below the knee, said sling comprising a curved or cup shaped piece of leather provided with perforations therein. The straps e e are passed through the slots d^7 d^7 and secured adjustably in any desired way as to buckles d^8 d^8, secured to the side pieces adjacent to said slots, The flexible side portions of the thigh and calf sections are cut away at front and rear, adjacent to the knee joint (hereinafter described) to facilitate the action of the knee joint and also to allow a portion of the leg of the wearer below the knee joint to project rearwardly if the leg is to be used in such manner. The calf section is also preferably provided with a knee pad F, secured to the front side of the flexible portions d^2 d^3, preferably by means of a strap f, said pad having a flap f^1 which extends down inside of the calf section, as shown in Fig. 3.

The thigh and calf sections of the leg are connected by two spring joint or hinge connections G, the construction of which is shown in detail in Figs. 10, 11 and 12. Each of these joints comprises two circular hinge members g g^1, each provided with a shank g^2 which is riveted or otherwise secured to one of the side or stiffening bars, as shown in Fig. 2. The hinge member g consists of a circular plate, provided with an annular flange g^3, a pair of stop lugs g^4 g^4 and a central aperture to receive a separate hub or boss g^5 provided with a series of ratchet teeth g^6 on its outer face and having a central recess g^7 within the same. The hinge member g^1 consists also of a circular plate provided with an annular flange g^8 adapted to register with the flange g^3 of the other member, stops lugs g^9 g^9, a central boss g^{10} adapted to fit into the recess g^7 of the boss g^5, and a spring pawl g^{11} secured to the outer face of the plate and provided with a part projecting through an aperture in the plate in position to engage the ratchet teeth g^6 on the hub or boss g^5. g^{12} represents a coiled spring enclosed between the two plates g g^1 one end being secured to the plate g as shown at g^{13}, Fig. 10, the other end being secured to the hub or boss g^5. When the parts are put together they are secured in position by a screw g^{14} passing through the hub or boss g^5 and engaging a threaded aperture in the boss g^{10}. The boss g^5 is provided with a flange which projects beyond the edges of the aperture in plate g through which the boss passes, and the rear face of the boss is provided with slotted or recessed portions to receive an adjusting tool H such as is shown in Fig. 13, provided with bifurcated arms h h to engage the recesses in the boss and turn it so as to tighten the spring g^{12}. The pawl g^{11} engages the ratchet teeth of the boss and holds it in its adjusted position. The stop lugs of one plate engage those of the other plate when the parts are moved into the positions shown in Figs. 1, 2 and 3, so as to prevent the knee joint from bending rearward. The springs g^{12} of the knee joints can be adjusted accurately so as to give the required pressure to throw the lower part of the leg forward in walking in the most natural manner, and the hinge plates g g^1 are each provided with a shoulder g^{15} adjacent to the attaching shank which shoulder bears against the edge of the other plate so that when the parts of the leg are in line, as in standing still, all the weight is borne by these shoulders and the plates and no weight is put upon the screw g^{14} or boss g^5, hence there is no tendency of the joints to get out of order, or to yield under any strain that may be put upon them, the strain not coming at any time on the pivotal portions.

The thigh and calf portions of the leg are also provided, adjacent to the knee joints, with removable and adjustable cross bars K for holding the stiffening bars at the required distance apart. These devices are exactly alike and a description of one will apply to the other. The cross bar K comprises two threaded bolts k k passing through the opposite side stiffening bars, and rigidly secured thereto by nuts k^1 k^1 on the inner sides thereof, and a central sleeve k^2 provided with right and left hand interior threads and a central flange k^3 which is constructed to enable the sleeve to be rotated. In this instance the central flange is provided with a series of holes to receive a tool to enable the sleeve to be turned. By rotating this sleeve the side stiffening bars can be adjusted to the desired distance apart and held rigidly in the adjusted position. It will be obvious that these adjusting cross bars are not required when the wearers' leg extends through the portions of the artificial leg where they are located and in such case one or both of the cross bars will be removed as required. A hollow knee section R is also provided composed preferably of leather having its lower end r hemispherical in form, and united to the upper tubular portion, which is preferably slit vertically at front and rear, as shown at r^1 to facilitate fitting it into the lower part of the thigh section. The cylindrical portion of the knee section may be held in place in any desired manner but it is found convenient to lace it to the thigh section by means of the same lacings which are used to lace the front and rear parts of the side portions together. This knee section will obviously only be used where the amputation is above the knee and will in such case give a natural appearance by distending the clothing properly above the knee.

The foot section L of this improved artificial leg is shown in detail in Figs. 4, 5, 6 and 7 and is constructed as follows: l represents the ankle portion of the foot section, which is preferably hollowed out at its upper end, as shown at l^1 and is provided with a vertical slot l^2 and with lateral recesses l^3 l^3 extending from the top down to horizontal shoulders l^4 l^4 (see Figs. 5 and 6). The lower ends of the stiffening side bars d, d^1 of the calf section fit into said recesses, and are secured to the foot section by a bolt M, which passes through the slot l^2 and is provided with a suitable nut m. By this means the length of the leg can be adjusted a distance equal to the length of the slot l^2 and the necessity of having so many sizes of legs in stock, is avoided, as a few sizes can be made to accommodate persons of all the varying heights. When the stiffening bars are adjusted above the shoulders l^4 l^4 blocks l^5 l^5 will preferably be inserted between the end of said bars and the shoulders as shown in Fig. 5.

The bottom part of the ankle section l, is provided with the front and rear beveled faces l^6 l^7 and a rear flange l^8. l^9 represents the main foot section provided with a recess l^{10} at the top to receive the ankle section and a recess l^{11} on the under side. The rear part of the upper portion is made to fit within the flange l^8. The two parts are connected by an improved ankle joint of peculiar construction, the parts of which are shown in detail in Fig. 7. The joint comprises two plates N N^1 the lower one N being provided on its lower side with a central hemispherical recess n, and threaded apertures to receive retaining screws n^1 n^1 and having oil receiving recesses n^2 n^2 in its ends closed by suitable plugs n^3 n^3 of cork or wood. The upper surface of the plate N is rounded to receive the semi-cylindrical upper plate N^1 which directly engages it, and the plate N is further provided with oil holes n^4 n^4 extending from the recesses n^2 n^2 to the upper face of the plate to supply oil between the plates N and N^1. The oil recesses n^2 n^2 are filled with heavy oil, which may be absorbed in waste or other absorbent material if desired, and this joint is thus kept lubricated at all times. N^2 represents the connecting bolt which has a hemispherical head n^5 fitting recess n in plate N and extends through a transverse slot n^6 in plate N and a hole n^7 in plate N^1. The slot n^6 permits the required movement of the joint, the plate N^1, sliding upon the plate N. At its upper end bolt N^2 is provided with a rubber or other elastic washer n^8 and a suitable nut n^9 which may be locked if desired by a pin or cotter n^{10} passing through a hole in the bolt and engaging a groove in the nut n^9.

The ankle section l is provided on its lower faces l^6 and l^7 with spring receiving recesses l^{12} l^{12} and the foot piece l^9 is provided with opposite recesses l^{13}, l^{13}. In these recesses, one pair of which are arranged forward of and the other pair in rear of the ankle joint, are located compression springs l^{14} l^{14} which give the requisite elasticity to the ankle joint, while permitting the easy movement of the parts. The recess l^{11} in the bottom of the foot section is closed by a leather covered pad l^{16} held in place by a screw l^{17}.

The front portion of the foot piece l^9 is provided with a toe piece l^{15} connected to the foot piece by a joint P exactly similar to the ankle joint previously described, and springs p p are interposed between the two parts in front of and in rear of the joint P to permit the toe piece to move with respect to the foot piece and to restore it to normal position in walking, thus rendering the use of the artificial leg easy and natural, and obviating almost entirely the awkwardness usually accompanying the use of an artificial leg. The bottom of the toe piece is preferably provided with a leather covered pad l^{18} held in place by a screw l^{19} as shown.

In Figs. 1, 2 and 3 is shown the leg arranged to accommodate a limb amputated above the knee, the stump being supported by the sling C and the side portion of the thigh section which are laced around it. In order to give further support, especially in cases where the end of the mutilated member is tender, a crutch support Q is provided, shown in Figs. 1 and 15, which is attached to the outer stiffening bar A and is provided with a hinge joint q at a point substantially opposite the hip joint of the wearer, the upper end of the crutch support being provided with a support q^1 adapted to rest under the arm pit of the wearer and thus enable a large portion of the weight to be taken off the injured leg. The upper portion of the crutch support is preferably provided with a spring latch or pawl q^2 which engages a notch q^3 in the other part adjacent to the hinge, (see Fig. 14), and has a tendency to hold the parts locked when in vertical position to prevent them from buckling, while not interfering with the operation of the hinge in sitting down, or bending the body. The knee pad F may be detached when the leg is used in this manner.

In Fig. 8 the leg is shown arranged for use with a limb amputated below the knee where it is desired to support the body partly from the knee. In this case, the sling C is secured to the lower slots a^7 a^7 to serve as a support for the user's knee, the knee being further cushioned by the pad F. In this case the cross bar K will be removed from the thigh section A, as indicated in the drawing.

In Fig. 9 is shown the device arranged for use with a limb amputated considerably below the knee. In this case the sling E is employed, and both cross bars K, K, are removed. The pad F protects the knee from chafing on the upper edges of the calf section, and the flap f^1 protects the leg of the wearer from rubbing against the lacings at the front of the calf section.

It will be seen that the leg can be used for any kind of an amputation, and by means of the adjustable connection between the calf section and the foot, one size of leg can be adjusted to accommodate persons varying considerably in height, so that only a few sizes of the leg need be manufactured or kept in stock to supply any usual demand.

In action the artificial limb is thoroughly under control and will act so nearly like a natural limb as to enable the wearer to walk easily and without apparent effort and to make any ordinary movements with precision.

This artificial leg is also provided with a removable and adjustable lining or filling to surround the injured member, and come between it and the inner surface of the artificial leg. For this purpose it is preferred to use a thin sheet or cork, which may be suitably bound with fabric around the back and edges if desired but is so arranged that the cork comes in contact with the injured limb. This lining or filling serves several extremely useful purposes, to wit, it protects the inner surface of the leg from becoming soiled by perspiration or stained from discharges from the wounded member; it also forms an agreeable and non-absorbent surface to engage the injured member, whereby it can be readily cleansed; it also constitutes a filling to make up for the usual shrinkage, in the size of the wounded member.

In Fig. 17 is shown the artificial leg arranged for a thigh amputation and provided with a lining such as above described, which is preferably made in two parts as shown in Fig. 18. U U^1 represents the parts of the cork lining which are provided with straps u and u^1 or other suitable retaining devices for adjustably and removably securing them to the interior of the thigh section of the artificial leg.

In Fig. 18 is shown this improved leg arranged for an amputation below the knee, in which V V^1 represent the parts of the cork lining or filling arranged to fit within the calf section of the leg and provided with straps v v or other suitable retaining devices for adjustably and removably securing them in the calf section. The sections of the linings U U^1 and V V^1 may also be provided at their meeting edges with lacings or other adjustable means for securing them together if desired. It is also obvious that both the linings U U^1 and V V^1 may be used in a single leg where the amputation is below the knee, if desired.

Having now particularly described and ascertained the nature of this said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. An artificial leg, comprising among its members a thigh portion having side stiffening bars, the outer bar being extended upwardly a greater distance than the inner bar, flexible side portions connected to said stiffening bars, adjustable devices for connecting said side portions together and a belt secured to said outer side bar adjacent to its upper end, substantially as described.
2. An artificial leg comprising among its members, the thigh section, a calf section, a hinge connection between the said sections, a spring for said hinge connection and devices for adjusting the tension of said spring having a part extending to the exterior of said hinge connection adapted to be operated without separating the parts of said hinge connection, substantially as described.
3. An artificial leg comprising among its members, the thigh and calf sections, a hinge connection connecting said sections comprising two plates pivotally connected, and provided with stops to prevent the hinge from opening rearward, a spring for said hinge connection, a rotatable adjusting device for said spring and devices for holding said rotatable device in its adjusted position, substantially as described.
4. An artificial leg comprising among its members, the thigh and calf sections, hinge connections between said sections, each comprising a pair of plates, pivotally connected, a rotatable part disposed concentrically with the pivot of said plates and provided with ratchet teeth, a coiled spring between said plates, secured to one of said plates, and to said rotatable part, and a pawl on the other plate engaging said ratchet teeth, substantially as described.
5. An artificial leg comprising among its members the thigh and calf sections, a hinge connection between said sections consisting of two plates, one secured to each section, each plate being provided with a part to engage a part of the other plate to limit the movement of the hinge in one direction, a rotatable hub passing through one of said plates and provided outside the hinge with means for turning it, a spring secured at one end to one of said plates and at the other end to said hub, ratchet teeth on said hub, a pawl secured to one of said plates and engaging said ratchet teeth, and a pivot passing through said hub, and holding said plates together, substantially as described.
6. An artificial leg comprising among its members the thigh and calf sections, separate hinge connections between said sections located at the inner and outer sides thereof, said calf section being provided with a cross bar adjacent to said hinge connections and means for adjusting said cross bar longitudinally to regulate the width of said thigh sections, substantially as described.
7. An artificial leg comprising among its members the thigh and calf sections, separate hinge connections between said sections located at the inner and outer sides thereof, said thigh and calf sections being each provided with a cross bar, adjacent to said hinge connections, and means for adjusting each of said cross bars longitudinally to regulate the width of said sections, to insure the proper operation of said hinge connections, substantially as described.
8. An artificial leg comprising among its members, thigh and calf sections, each provided with lateral stiffening bars, and flexible side portions, hinge connections between the adjacent stiffening bars of said sections, each section being provided with a removable adjustable cross bar engaging its stiffening bars, adjacent to said hinge connections, substantially as described.
9. An artificial leg comprising among its members, thigh and calf sections, each provided with lateral stiffening bars, and flexible side portions, hinge connections between the adjacent stiffening bars of said sections, each section being

provided with a removable and adjustable cross bar, comprising threaded rods or bolts extending through opposite stiffening bars, adjacent to said hinge connections, nuts on said rods or bolts for securing each to one of said bars, and a sleeve provided with right and left threaded apertures connecting said rods or bolts, substantially as described.

10. An artificial leg comprising among its members, the thigh section and calf section hinged together, each section being provided with a means for holding and vertically adjusting a leg supporting sling, and a sling adapted to be secured to either section and vertically adjusted therein, substantially as described.

11. An artificial leg comprising among its members, the thigh section provided with lateral stiffening bars, flexible side portions and a plurality of strap securing devices in different vertical planes, of a sling provided with supporting straps for engaging adjustably said strap securing devices, to enable the sling to be adjusted vertically, substantially as described.

12. An artificial leg comprising among its members the thigh section composed of inner and outer side bars and flexible side portions connected therewith, the outer side bar being extended upward beyond the inner side bar, means for adjustably securing said flexible side portions together, a belt secured to the upper end of said outer side bar, and a crutch support pivotally connected to said outer side bar below its upper end, at a point substantially in line with the hip joint, substantially as described.

13. An artificial leg comprising among its members, the thigh section provided with lateral stiffening bars, and flexible side portions, a crutch support hinged to the outer of said stiffening bars at a point substantially in line with the hip joint and a spring pawl adapted to engage a recess in a part connected with said crutch support to hold it in line with said stiffening bar, substantially as described.

14. An artificial leg comprising among its members the thigh section and calf section each provided with lateral stiffening bars, and flexible side portions secured thereto and adjustably connected to each other, hinge connections between adjacent stiffening bars, a removable cross bar, engaging the side bars of each section, devices on each section for holding and vertically adjusting a sling, and a sling adapted to be secured to either of said sections, substantially as described.

15. An artificial leg comprising among its members, a thigh and calf section, each provided with a pair of lateral stiffening bars, and flexible side portions, of a foot section having the outer portion thereof provided with a vertically disposed part adapted to extend up within the lower part of the calf section and provided on each side with a vertical recess to receive the lower ends of the side bars of said calf portion and a detachable bolt passing through said stiffening bars and said vertically disposed part, and forming the sole connection between the foot section and calf section, substantially as described.

16. An artificial leg comprising among its members thigh and calf sections, each provided with a pair of lateral stiffening bars, and flexible side portions, of a foot section having the outer portion thereof provided with a vertically disposed part adapted to extend up within the lower part of the calf section and provided on each side with a vertical recess to receive the lower ends of the side bars of said calf portion, the said vertically disposed portion of the foot section and the contiguous portions of said side bars being provided with registering vertically disposed slots, and a detachable bolt passing through said slots and forming the sole connection between the foot section and calf section, substantially as described.

17. An artificial leg, comprising among its members a foot section, a calf section, a thigh section hinged to the calf section and provided on its outer side with an upwardly extending portion adapted to extend above the hip joint, and a belt having a pivotal and sliding engagement with said upwardly extending portion, substantially as described.

18. An artificial leg comprising among its members a thigh section provided with side stiffening bars, the outer bar being extended upwardly a greater distance than the inner bar, flexible side portions connected to said stiffening bars, adjustable devices for connecting said side portions, a stud secured to the upper end of the outer stiffening bar, and a belt having a longitudinally slotted portion pivotally and slidingly engaging said stud, substantially as described.

19. An artificial leg comprising among its members, a thigh section provided with side stiffening bars, the outer bar being extended upwardly a greater distance than the inner bar, flexible side portions connected to said stiffening bars, adjustable devices for connecting said side portions, a stud secured to the upper end of the outer stiffening bar, and a belt provided with a metal plate secured thereto and provided with a slot, extending longitudinally of the belt, and engaging said stud, forming a pivotal sliding connection between said stud and said belt, substantially as described.

20. An artificial leg, comprising among its members the thigh section and calf section each provided with lateral stiffening bars, and flexible side portions and connections for holding said side portions together, hinge connections between the stiffening bars of said thigh and calf sections and a detachable hollow knee piece, secured to one of said sections and having a rounded portion projecting into the other section, substantially as described.

21. In an artificial leg, the combination with the calf section, of the thigh section hinged thereto and provided with lateral stiffening bars, the outer bar being extended upwardly beyond the inner bar, a strap extending around the upper part of the thigh section from the top of the outer stiffening bar to the top of the inner stiffening bar, to transfer some of the weight of the wearer to the outer stiffening bar, substantially as described.

22. In an artificial leg, the combination with the calf section, of the thigh section hinged thereto and provided with lateral stiffening bars, the outer bar being extended upwardly beyond the inner bar, a strap extending around the upper part of the thigh section from the top of the outer stiffening bar to the top of the inner stiffening bar, to transfer some of the weight of the wearer to the outer stiffening bar, and a crotch pad, arranged over the inner part of the upper edge of said thigh portion and having a flap or part engaging said strap to hold the pad in position, substantially as described.

23. An artificial leg, comprising among its members, the foot section provided with parts movable with respect to each other, and a joint connecting said parts, including a plate secured to one of said parts having a rounded upper surface, a hemispherical socket on its under side, and a transverse slot communicating therewith, a semi-cylindrical part engaging the other part, and fitting over the rounded portion of said first plate and a bolt having a hemispherical head engaging the corresponding recess in the first plate, passing through the slot therein, and through the second plate and provided with a securing nut, substantially as described.

24. An artificial leg comprising among its members, the foot section provided with parts movable with respect to each other, and a joint connecting said parts including a plate having a rounded upper face, a hemispherical recess in its lower face, oil recesses and oil holes communicating therefrom to the said rounded face, a second plate curved semi-cylindrically and engaging the rounded face of the first plate, and a bolt extending through a transverse slot in the first mentioned plate, and an aperture in said second plate and having a hemispherical head engaging said hemispherical recess, substantially as described.

25. In an artificial leg, the combination with a hollow member, adapted to receive the wounded limb, of a removable lining or filling, interposed between the wounded limb and the interior of said hollow member, substantially as described.

26. In an artificial leg, the combination with a hollow member, adapted to

receive the wounded limb, of a removable and adjustable lining or filling interposed between the wounded limb and the interior of the hollow member, substantially as described.

27. In an artificial leg, the combination with a hollow member, of a detachable cork filling or lining therefor, substantially as described.

Dated the 31st day of January 1902.

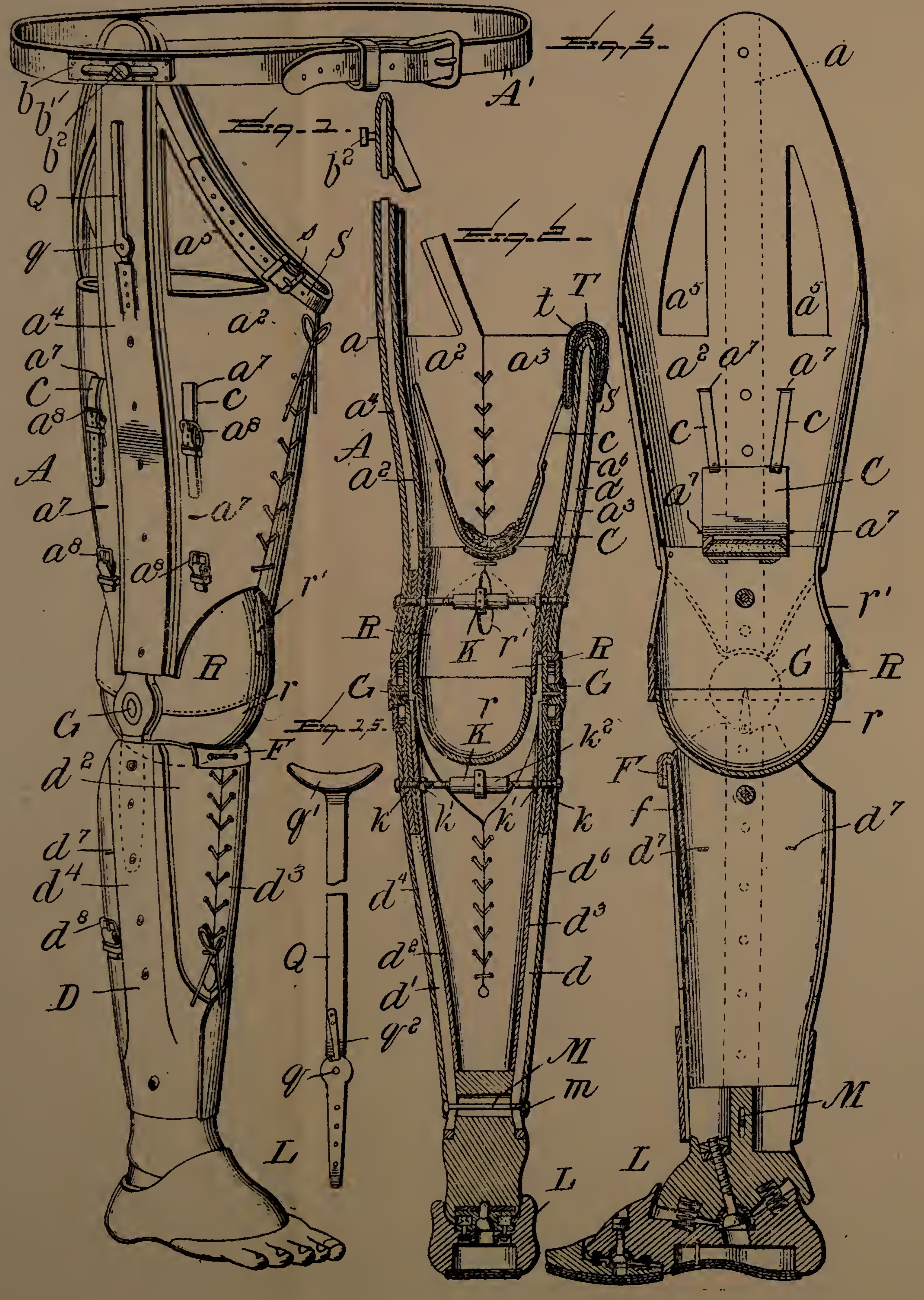
G. F. REDFERN & Co.
4, South Street, Finsbury, London,
Agents for the Applicant.

Redhill: Printed for His Majesty's Stationery Office, by Love & Malcomson, Ltd.—1902.

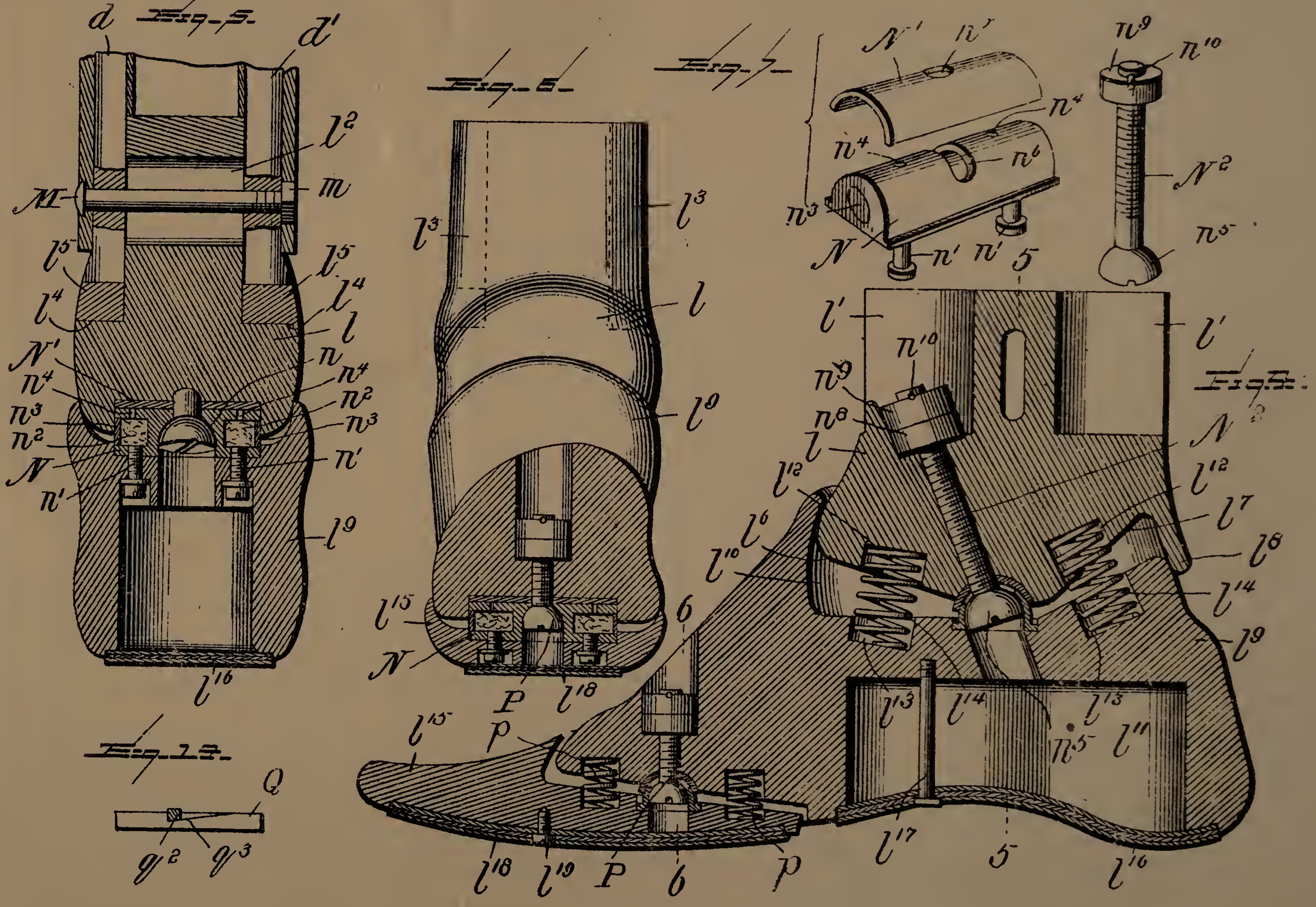
WELLCOME LIBRARY INSTITUTE

(4 SHEETS)

SHEET 1.



SHEET 2.



[This Drawing is a reproduction of the Original on a reduced scale.]

Malby & Sons. Photo-Litho.

SHEET 3.

Fig. 8.

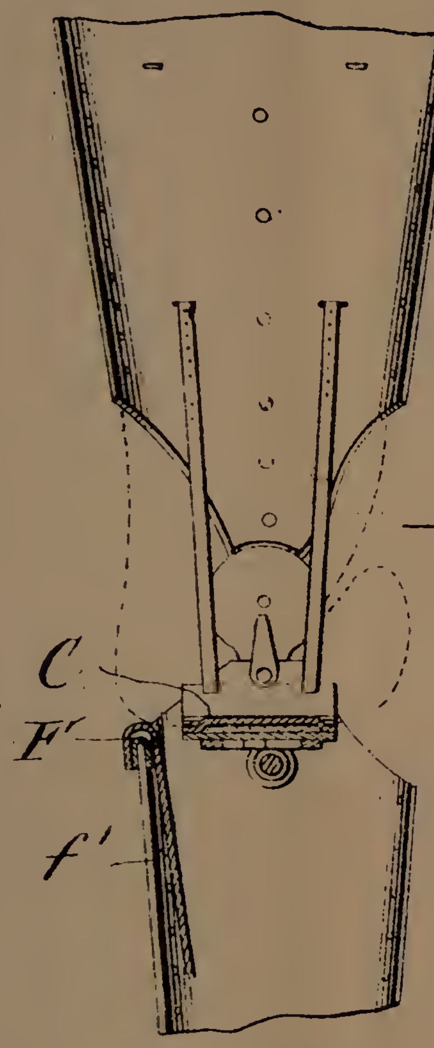


Fig. 15.

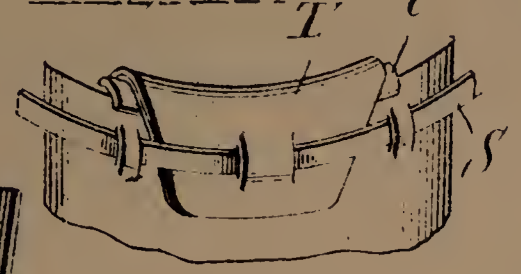


Fig. 13.

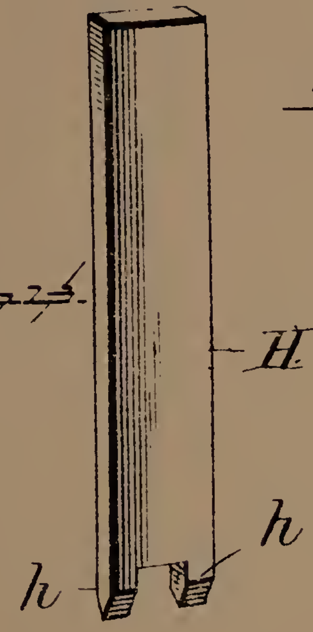


Fig. 9.

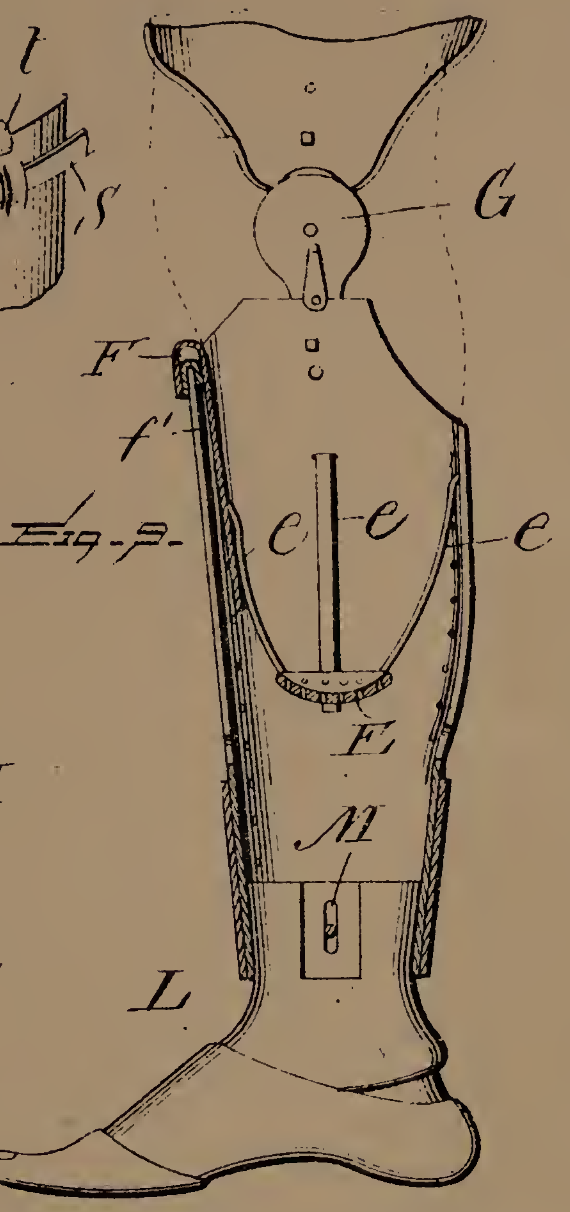


Fig. 10.

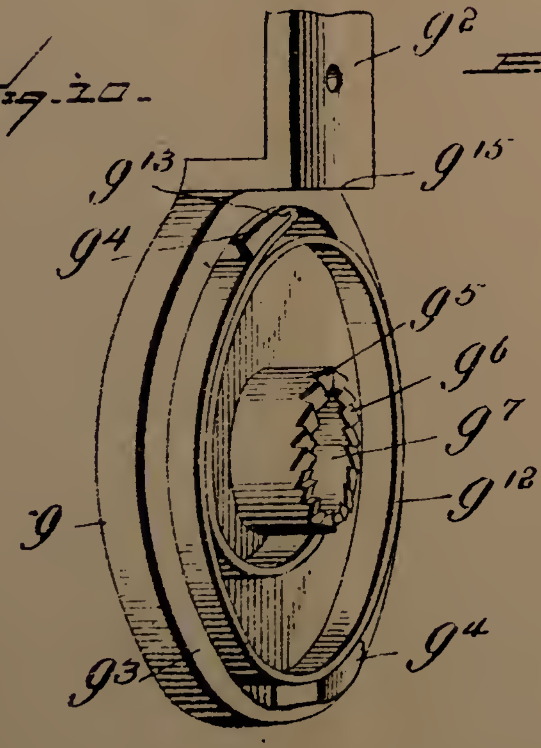


Fig. 11.

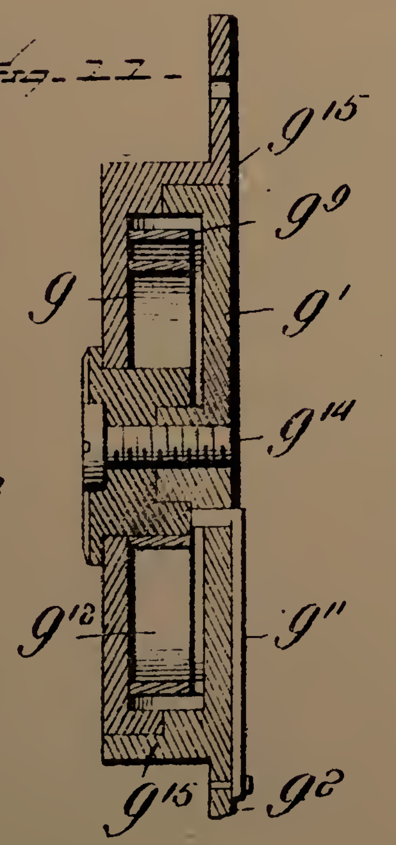
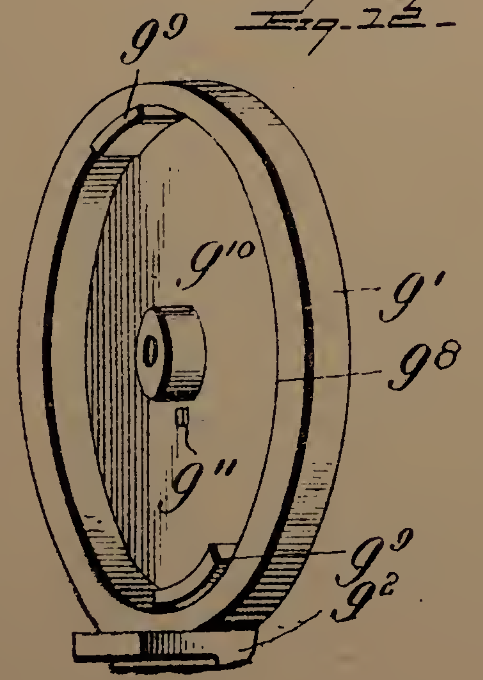


Fig. 12.



SHEET 4.

Fig. 16.

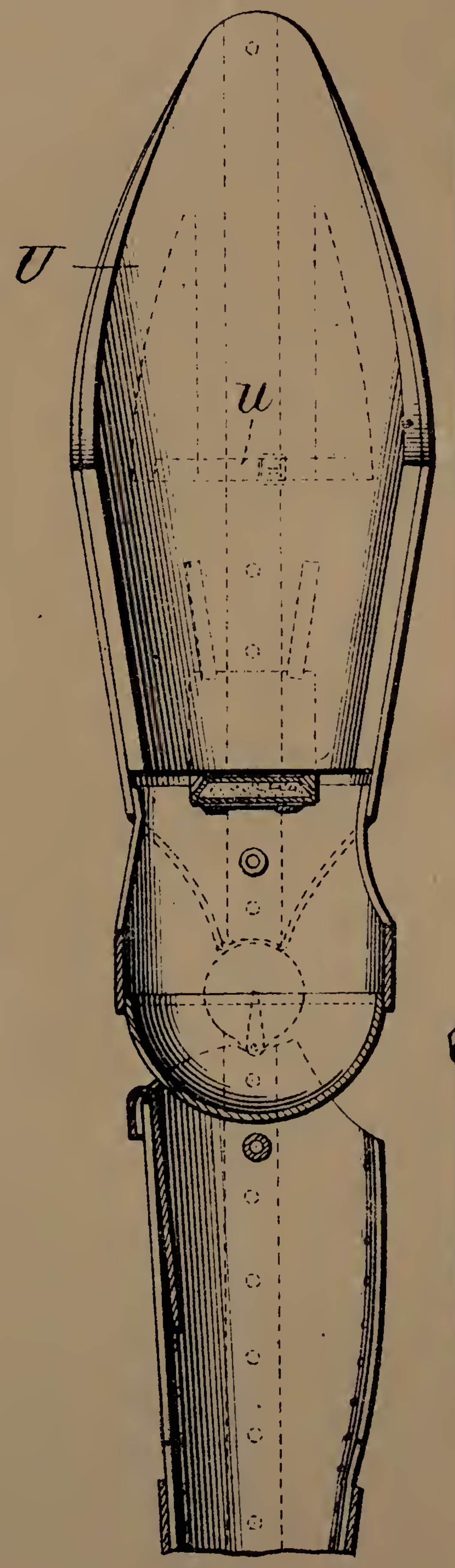


Fig. 17.

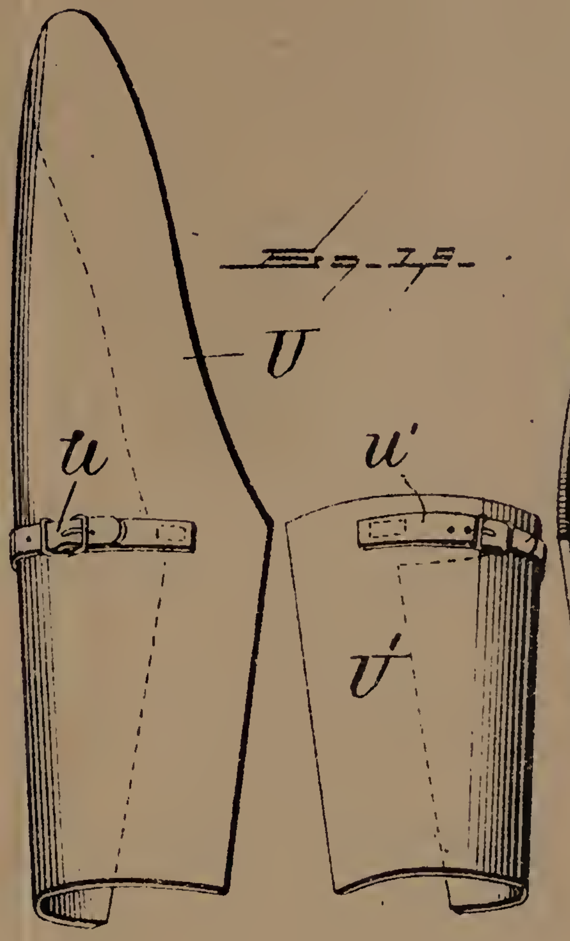


Fig. 18.

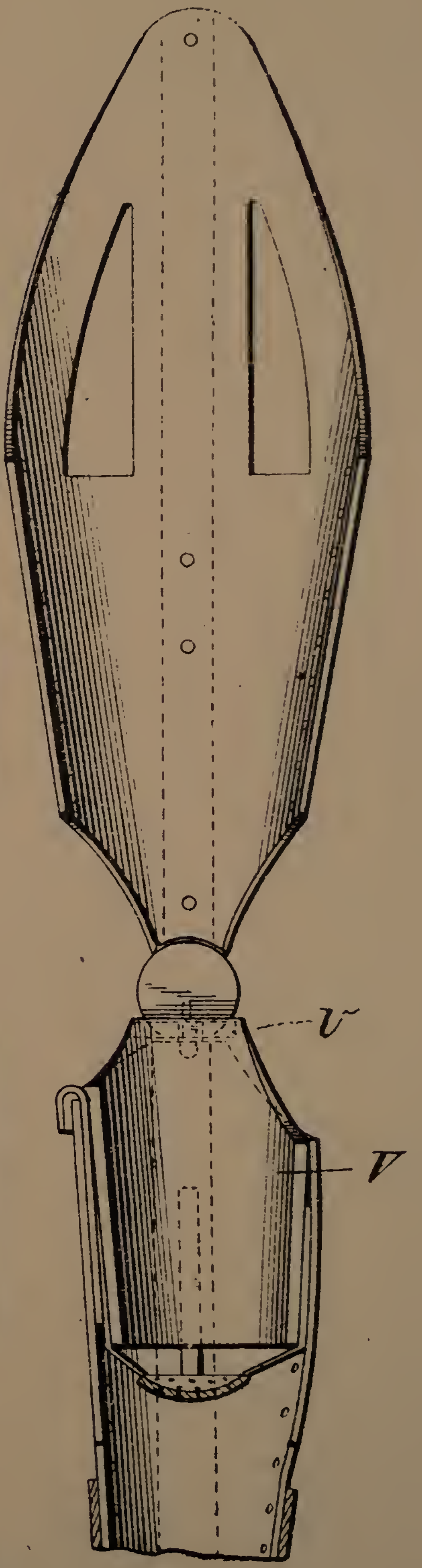


Fig. 20.

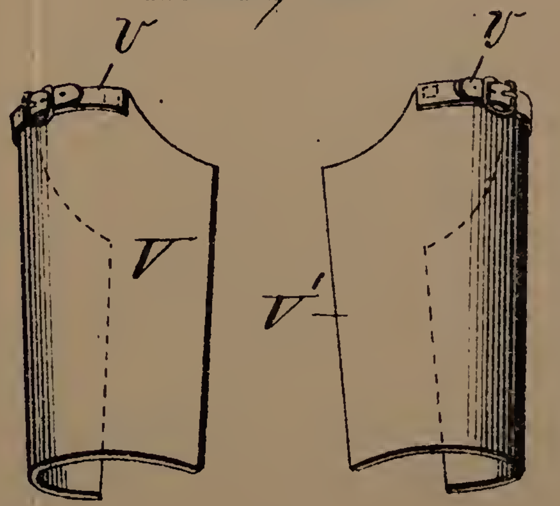
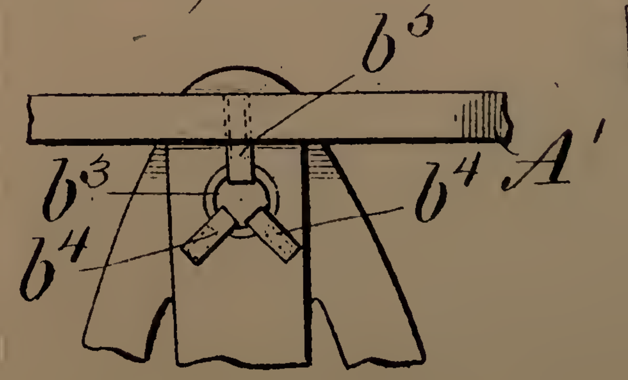


Fig. 21.



[This Drawing is a reproduction of the Original on a reduced scale]

Malby & Sons, Photo-Litho.